

# TITLE: PORTABLE DATA STORAGE DEVICE

## BACKGROUND OF THE INVENTION

### 1. Field of the invention

The present invention is related to a portable data storage device,  
5 and especially to a portable data storage device comprising a PCB  
(printed circuit board), a first and a second fixing seat, a housing and a  
protecting cover; wherein an end of the PCB can fixedly engage the first  
fixing seat, a connector of the PCB can be fixedly provided thereon with  
the second fixing seat and is covered with the protecting cover, and the  
10 first and the second fixing seats are covered with the housing; thereby  
the PCB and the housing can be positioned by means of the first and the  
second fixing seats. The present invention has the features of being easy  
for assembling, having a steady housing and having firmness of fixing  
etc.

### 15 2. Description of the Prior Art

Conventional portable data storage devices are generally called  
“portable hard disks”, such a device has a PCB therein, and the PCB is  
provided thereon with a Flash Memory, and an upper and a lower cover  
are provided over the outer surfaces thereof. However, the upper and the  
20 lower covers have to be assembled concurrently, and be dealt with  
“supersonic-wave melting”, assembling of them are more difficult, the  
entire strength of fixing is smaller, and they make inferior aesthetic  
appearance by having melting lines; moreover, people are accustomed to  
place such devices in their suitcases or backpacks for carrying with  
25 themselves; once the suitcases or backpacks inadvertently drop, the

upper and the lower covers of the conventional devices may be broken by collision; such devices thereby are not so ideal.

Additionally, a conventional device generally has its PCB locked on the lower cover with bolts to increase the firmness of fixing.

- 5 However, after a period of time of using, under the actions of forces of insertion and drawing, the bolts and the PCB tend to form gaps therebetween, then a connector of the PCB may have the phenomenon of loosening during insertion and drawing.

#### SUMMARY OF THE INVENTION

- 10 The primary object of the present invention is to provide a portable data storage device; the device has the following advantages:

1. The housing of the present invention is integrally formed of metal such as: an extruded aluminum housing; it is more steady, and can avoid breaking that probably be induced by an external force.
- 15 2. The housing of the present invention can also be integrally formed by injection of plastic such as: a plastic housing with high strength; it is also more steady, and can avoid breaking that probably be induced by an external force.
3. The device of the present invention does not have a  
20 "supersonic-wave" melting line, and thus is more beautiful apparently.
4. The device of the present invention has a housing benefit to integrally forming, a PCB and the housing are firmly engaged with a first and a second fixing seat, the device is easier for assembling,  
25 and the entire firmness of fixing thereof is larger.

5. The device of the present invention does not need bolts to assist locking of the PCB; a connector of the PCB does not have the phenomenon of loosening during insertion and drawing.

Technically, the measure that is adopted in the present invention is  
5 the development of a portable data storage device, it comprises:

a PCB provided with a circuit, a memory and a connector;

a first fixing seat fixedly engaged with an end of the PCB;

a second fixing seat fixedly engaged with the connector of the  
PCB;

10 a housing covers the first and second fixing seats firmly; and

a protecting cover covers the connector firmly; and the housing is a hollow housing integrally formed of metal.

The present invention will be apparent in its features, technical measures and particular functions after reading the detailed description  
15 of the preferred embodiments thereof in reference to the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective schematic view of the device of the present invention;

20 Fig. 2 is an analytic perspective view of the device of the present invention;

Fig. 3 is a sectional schematic view taken from a section line A-A from Fig. 1;

Fig. 4 is a sectional schematic view taken from a section line B-B  
25 from Fig. 1;

Fig. 5 is a sectional schematic view taken from a section line C-C from Fig. 1;

Fig. 6 is a perspective schematic view showing another embodiment of the first fixing seat of the present invention;

5 Fig. 7 is a perspective schematic view of the aforesaid another embodiment of the first fixing seat in Fig. 6;

Fig. 8 is an analytic perspective view of a second embodiment of the present invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

10 Referring firstly to Figs. 1 and 2 respectively showing a perspective schematic view and an analytic perspective view of the device of the present invention, as are shown, in the preferred embodiment, the device of the present invention comprises: a PCB 10, a first fixing seat 20, a housing 30, a second fixing seat 40 and a  
15 protecting cover 50. Wherein:

The PCB 10 is provided with a connector 11 (such as: a USB connecting plug) on its front end, the tailing end of it is provided with notches 12 and engaging portions 13 respectively on both sides thereof, the notches 12 and engaging portions 13 are formed therebetween wings  
20 14, the PCB 10 is provided also with a circuit and a memory (such as: a Flash Memory); the circuit and the memory are not the objects of the present invention and thereby are not shown in the drawings.

The first fixing seat 20 has therein a receiving space 201, and has a stepped frame 21 provided with positioning holes 22 on both lateral  
25 sides thereof for firmly engaging the wings 14 on the tailing end of the

PCB 10.

The housing 30 is integrally formed of metal (such as: an extruded aluminum sleeve), or is integrally formed by injection of plastic (such as: a plastic sleeve with high strength), one end of the housing 30 can  
5 cover the stepped frame 21 of the first fixing seat 20.

The second fixing seat 40 is a hollow seat provided with a protruding stop portion 41, and has a stepped frame 42 provided with engaging hooks 43 on its upper and lower inner walls for insertion for  
10 fixed engaging of the connector 11 of the PCB 10, the front end of the connector 11 can protrude out of the second fixing seat 40. The stepped frame 42 can be slipped in the other end of the housing 30.

The protecting cover 50 covers the connector 11 firmly, and is abutted on the second fixing seat 40.

Thereby a portable data storage device is formed, it can be  
15 connected through the connector 11 with a personal computer (PC), a notebook (NB) and some other electronic device for data access at any time, and thereby it has the features of being easy for assembling, having a steady housing and having firmness of fixing etc.

Referring to Figs. 2 and 3 respectively showing an analytic  
20 perspective view of the device of the present invention and a sectional schematic view taken from a section line A-A from Fig. 1, wherein when the first fixing seat 20 is firmly engaged with the tailing end of the PCB 10, the notches 12 of the PCB 10 are abutted on a wall 24 of the first fixing seat 20, the positioning holes 22 provided on the stepped frame  
25 21 are engaged with the wings 14 on the tailing end of the PCB 10, ribs

23 provided at the positioning holes 22 are firmly engaged with the engaging portions 13 on the tailing end of the PCB 10, thereby firmness of fixing of the second fixing seat 40 and the PCB 10 can be largely increased.

5        Besides, the housing 30 can be abutted against by two stop portions 202, 41 respectively of the first fixing seat 20 and the second fixing seat 40, hence the second fixing seat 40 can further be provided with slits 45 on two inner lateral sides of the stepped frame 42 for firm engagement of the front end of the PCB 10.

10        The above stated structural features and the space style constructed form the quintessence of the device of the present invention.

Referring to Figs. 4-6 respectively showing a sectional schematic view taken from a section lines B-B, C-C of Fig. 1 and a perspective schematic view showing another embodiment of the first fixing seat of  
15 the present invention, wherein the first fixing seat 20 can further be provided with supporting portions 25 respectively on the inner upper and lower walls of the stepped frame 21 for engagement of the tailing end of the PCB 10 to fixedly clamp the end of the PCB 10.

And the two engaging hooks 43 of the second fixing seat 40 can  
20 firmly engage an end 11a of the connector 11 in order to prevent retracting or loosening of the PCB 10 during insertion and drawing.

And more, when the first fixing seat 20 engages with the end of the PCB 10, the PCB 10 can be tightly abutted against a stop wall 251 provided between the two supporting portions 25.

25        The supporting portions 25 each can be further provided with a

declined surface 250 in favor of leading in the tailing end of the PCB 10 to make easier assembling of the first fixing seat 20 and the PCB 10.

The above stated structural features can increase the entire firmness of fixing without bolts to assist locking of the PCB; and they can make  
5 the connector 11 of the PCB not subjected to having the phenomenon of loosening during insertion and drawing. This can be deemed as a broadening of the scope of the preferred embodiment of the device of the present invention, it is not departed from the spirit of the present invention, and thereby shall fall into the scope of the present invention.

10 As shown in Fig. 7 that is a perspective schematic view of the aforesaid another embodiment of the first fixing seat in Fig. 6, wherein the first fixing seat 20 is provided with two pair of supporting portions 25 respectively on the inner upper and lower walls of the stepped frame 21, these pairs of supporting portions 25 are spaced away mutually for a  
15 suitable distance, this is for the purpose of adding an related electronic element on the tailing end of the PCB 10.

Referring to Fig. 8 that is an analytic perspective view of a second embodiment of the present invention, as is shown, in the second embodiment, the device of the present invention does not have a housing  
20 30, but still has a PCB 10, a first fixing seat 20, a second fixing seat 40 and a protecting cover 50. Wherein:

The first fixing seat 20 is provided therein with a receiving space 201, and has a stepped frame 21 provided with first positioning holes 22 respectively on both lateral sides thereof for firmly engaging wings 14  
25 on the tailing end of the PCB 10. Ribs 23 are provided at the first

positioning holes 22 and are firmly engaged with engaging portions 13 on the tailing end of the PCB 10. The stepped frame 21 is further provided with second positioning holes 26 on the top and bottom surfaces thereof.

5       The second fixing seat 40 is a hollow seat integrally formed by injection of plastic (such as: a plastic sleeve with high strength) for insertion and fixed engaging of a connector 11 of the PCB 10; the front end of the connector 11 can protrude out of the second fixing seat 40. The second fixing seat 40 has engaging hooks 43 respectively on its  
10   upper and lower inner walls for fixed engaging in the second positioning holes 26 of the first fixing seat 20.

And the second fixing seat 40 can further be provided with slits 45 respectively on two inner lateral sides of the stepped frame 42 for firm engagement of the front end of the PCB 10, thereby firmness of fixing  
15   of the second fixing seat 40 and the PCB 10 can be largely increased.

The above stated second embodiment is also a practical device of the present invention, it can be deemed as broadening of the scope of the first preferred embodiment of the device of the present invention, it is not departed from the spirit of the present invention, and thereby shall  
20   fall into the scope of the present invention.

Conclusively, having thus described the technical process of my invention, there has been no product of such structural features in the markets, what I claim as new and desire to be secured by Letters Patent of the United States are: